

IN THE CLAIMS:

Please amend claims 1-3 as follows.

1. (Currently Amended) A method of computing ~~FIR~~ finite impulse response (FIR) filter coefficients, comprising the steps of:

inputting a filter order of a universal maximally flat FIR filter, a number of zeros at $z=-1$, and a parameter for a group delay at $z=1$,

wherein the filter order ~~being is~~ a positive integer, the number of zeros ~~being is~~ an integer equal to or more than zero, and the parameter ~~being is~~ a rational number;

executing a first operation by a first recurrence formula which includes parameters for the filter order, the number of zeros, and the group delay, and provides coefficients in Bernstein form representation of a transfer function of the universal maximally flat FIR filter;

executing a second operation by a second recurrence formula ~~composed~~ comprising of additions, subtractions, and divisions by 2, by using a resultant of the first operation as an initial value; and

extracting impulse response coefficients of the universal maximally flat FIR filter from a resultant of the second operation.

2. (Currently Amended) The method according to claim 1, wherein:

the first recurrence formula is expressed as

$b_j' = (-1)\{(2d) b_{j-1}' + (j - 1) b_{j-2}'\} / (N - j + 1)$ where $1 \leq j \leq N$ with $b_0' = 1$ and $b_{-1}' = 0$,

wherein the filter order is N , the parameter for the group delay is d , coefficients in Bernstein form representation of a transfer function of the universal maximally flat FIR filter are b_j' ;

the resultant of the first operation is expressed as $B' = \{1, b_1', \dots, b_{N-K}', 0, \dots, 0\}$, wherein the number of zeros is K ;

the second recurrence formula is expressed as

$h_i^{(p)} = (1 + E) h_i^{(p-1)} / 2 + (1 - E) h_{i-1}^{(p-1)} / 2$ where $1 \leq p \leq N$, $0 \leq i \leq p$, with $h_0^{(0)} = B'$ and $h_{-1}^{(p)} = \{0, \dots, 0\}$,

wherein a sequence for computing impulse response coefficients of the universal maximally flat FIR filter is expressed as $h_i^{(p)} = (h_{i,j}^{(p)}) = (h_{i,0}^{(p)}, h_{i,1}^{(p)}, \dots)$, and an arbitrary sequence A_i is expressed as $E^j = E (E^{j-1} A_i)$, $E^1 A_i = E A_i = A_{i+1}$, $E^0 A_i = A_i$ in which a forward shift operator satisfying the expression is E ; and

the impulse response coefficients extracted from the resultant of the second operation are expressed as $h_i = h_{i,0}^{(N)}$ where $0 \leq i \leq N$.

3. (Currently Amended) A program for computing FIR-finite impulse response (FIR) filter coefficients embodied on a computer readable medium, the program causing a computer to execute the steps of:

determining every element of a single-dimension array B' using a filter order N ~~being a positive integer of a universal maximally flat FIR filter~~, a number of zeros K at $z=-1$, K ~~being an integer equal to or more than zero~~, and a parameter d for a group delay at $z=1$, d ~~being a rational number, all of which are provided by inputs~~, by changing in sequence an index j from 1 to $N-K$ in a recurrence formula $B'[j] = (-1) \times \{(2d)B'[j-1] + (j-1)B'[j-2]\} / (N - j + 1)$, the single-dimension array having $N+1$ elements $B'[j]$ where $0 \leq j \leq N$, in which an element $B'[0]$ thereof is initialized to 1 and all the elements thereof except the element $B'[0]$ are initialized to zero;

wherein N is a positive integer of a universal maximally flat FIR filter, K is an integer equal to or more than zero, d is a rational number, and N , K , and d are provided by inputs;

determining every element of a three-dimension array r by sequentially changing, in the order of indexes j , i , p , an index j from 0 to $N-p$, and an index i from 0 to p , an index p from 1 to N in a recurrence formula $r[p,i,j] = (r[p-1,i-1,j] - r[p-1,i-1,j+1]) / 2 + (r[p-1,i,j] + r[p-1,i,j+1]) / 2$, the three-dimension array r having N^3 elements $r[p,i,j]$ where $0 \leq p \leq N$, $0 \leq i \leq N$, $0 \leq j \leq N$, in which elements $r[0,0,j]$ thereof where $0 \leq j \leq N-K$ are initialized to elements of the single-dimension array $B'[j]$ where $0 \leq j \leq N-K$, and all the elements thereof except the elements $r[0,0,j]$ are initialized to zero; and

extracting elements $r[N,i,0]$ of the three-dimension array r where $0 \leq i \leq N$ as the impulse response coefficients of the universal maximally flat FIR filter.